M/037/0126

Mike Bradley <mbradley@utah.gov>

Incoming
TASK 6296
Response
NOV 4, 14

# Daneros Mine Vent Shaft Reclamation Designs

11 messages

**Andrea Reither** <AReither@energyfuels.com> Fri, Oct 24, 2014 at 2:29 PM
To: Mike Bradley <mbradley@utah.gov>, "McDougall, Ted" <tmcdouga@blm.gov>
Cc: "Frank Filas, P.E" <FFilas@energyfuels.com>, Ryan Ellis <REllis@energyfuels.com>

Ted and Mike,

In response to the May 28, 2014 UDOGM comments on the Daneros LM NOI, we revised/prepared the attached Vent Closure Designs. I pasted the series of UDOGM comments on this subject below:

> Previous Comment 4: The BLM requires that shaft closure designs be stamped by a Professional Engineer. Although the cap design EFR provided may be adequate, the Division recommends you use the BLM's Solid Minerals Reclamation Handbook, publication H-3042-1, for guidance.
>
> Fifth Review Comment: There is concern whether the shaft cap designs conform to the BLM design requirements outlined in Chapter 9 ofH-3042-1, particularly with regard to the cap diameter needing to be twice the shaft diameter. The BLM is reviewing these designs to determine if they are adequate.
>
> Follow-up Comment: The shaft design was discussed with the BLM in a telephone call on May 28, 2014. Due to the uncertainty of shaft locations and unknown surface material stability at these locations, the shaft capping designs
>
> must follow the BLM design guidance (H-3042-1 -Solid Material Reclamation, Chapter 9). The cap width must be twice the shaft diameter. The one-foot overhang shown in the designs is not adequate.
>
> The BLM also stated that the operator must plan for backfilling all shafts to the top, not just the ones that are not cased.

Ryan spoke with Ted recently and understood that much of the BLM's concerns about vent shaft backfill had to do with vent shafts that intercept ground water bearing formations. The attached Figure 4.3 is a new design specific to those vents. The other two existing vent closure designs, for cased and uncased vents, were also modified. All three designs now included a foam plug and a wider cement cap. Please review the attached designs and let me know if they adequately address your concerns about vent shaft reclamation. If you have ***any*** questions or thoughts, please give me a call. We would like to settle this issue completely so we can accurately summarize the designs in the draft EA.

Thanks,

Andrea

Energy Fuels Resources (USA) Inc.

Andrea Reither

*Environmental Permitting Specialist*

t: 303-389-4133

225 Union Blvd., Suite 600

Lakewood, CO, US, 80228

http://www.energyfuels.com



**3 attachments**

**Vent Closure Design Uncased Vents 4-2.pdf**
315K

**Vent Closure Design Cased Vents 4-1.pdf**
287K

**Vent Closure Design Cased Vents W Water 4-3.pdf**
353K

**Mike Bradley** <mbradley@utah.gov> Fri, Oct 24, 2014 at 3:36 PM
To: Paul Baker <paulbaker@utah.gov>, Emily Berry <EMILYBERRY@utah.gov>

Paul, Emily,
Received this email this afternoon. Emily, can you get these into MTS and issue a task while I'm out next week? Should be an AMD task for M/037/0126 Energy Fuels-Daneros. I responded to Andrea asking if hard copies would follow in the mail.
Thanks
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--
Mike Bradley
Environmental Scientist III / Reclamation Specialist
Utah Division of Oil, Gas and Mining
M-F 7:30-4:30
801-538-5332



**3 attachments**

**Vent Closure Design Uncased Vents 4-2.pdf**
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**Vent Closure Design Cased Vents W Water 4-3.pdf**
353K

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**Mike Bradley** <mbradley@utah.gov> Fri, Oct 24, 2014 at 3:41 PM
To: Andrea Reither <AReither@energyfuels.com>
Cc: "McDougall, Ted" <tmcdouga@blm.gov>, "Frank Filas, P.E" <FFilas@energyfuels.com>, Ryan Ellis <REllis@energyfuels.com>

Andrea,
We'll get these in the system. Will we be receiving hard copy originals in the mail?
I'll be out at lease Monday and Tuesday next week for some minor surgery. I hope to be back in the office Wednesday, but may not be able to talk well.
Thanks,
[Quoted text hidden]
–
Mike Bradley
Environmental Scientist III / Reclamation Specialist
Utah Division of Oil, Gas and Mining
M-F 7:30-4:30
801-538-5332



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**Andrea Reither** <AReither@energyfuels.com> Fri, Oct 24, 2014 at 3:51 PM
To: Mike Bradley <mbradley@utah.gov>
Cc: "McDougall, Ted" <tmcdouga@blm.gov>, "Frank Filas, P.E" <FFilas@energyfuels.com>, Ryan Ellis <REllis@energyfuels.com>

Mike,

I sent the designs for you to take a look at and see if they are in line with your expectations. If you and Ted think they are ok then we will submit them formally along with responses to the other fifth NOI review comments.

Thanks and I hope things go smoothly with your surgery next week.

Andrea

**From:** Mike Bradley [mailto:mbradley@utah.gov]
**Sent:** Friday, October 24, 2014 3:42 PM
**To:** Andrea Reither

**Cc:** McDougall, Ted; Frank Filas, P.E; Ryan Ellis
**Subject:** Re: Daneros Mine Vent Shaft Reclamation Designs

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**Mike Bradley** <mbradley@utah.gov> Fri, Oct 24, 2014 at 3:58 PM
To: Andrea Reither <AReither@energyfuels.com>, Ted McDougall <tmcdouga@blm.gov>

OK, a draft for review. No problem, will look them over ASAP.
Thanks, I hope so too...
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**McDougall, Ted** <tmcdouga@blm.gov> Mon, Oct 27, 2014 at 9:35 AM
To: Mike Bradley <mbradley@utah.gov>
Cc: Andrea Reither <AReither@energyfuels.com>

Mike, Andrea

The revised vent closure designs address BLM's previous concerns. Mike, once you have reviewed and are okay with the design then I think we can formalize.

Thanks
[Quoted text hidden]
--
Ted McDougall
BLM, Monticello Field Office
365 N. Main, P.O. Box 7
Monticello, Utah 84535
Phone: 435-587-1512
Fax: 435-587-1518

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**Emily Berry** <emilyberry@utah.gov> Mon, Oct 27, 2014 at 10:20 AM
To: Mike Bradley <mbradley@utah.gov>

Task 6296
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Emily Berry
Division of Oil, Gas & Mining
801-538-5308
Monday-Thursday 7:00-4:30 Friday 9:00-1:00
Office Hours M-F 8:00-5:00

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**Andrea Reither** <AReither@energyfuels.com> Mon, Nov 3, 2014 at 1:54 PM
To: "McDougall, Ted" <tmcdouga@blm.gov>, Mike Bradley <mbradley@utah.gov>

Mike,

Did you have a chance to review those vent designs late last week?

Thanks,

Andrea

**From:** McDougall, Ted [mailto:tmcdouga@blm.gov]
**Sent:** Monday, October 27, 2014 9:35 AM
**To:** Mike Bradley
**Cc:** Andrea Reither

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**Mike Bradley** <mbradley@utah.gov> Mon, Nov 3, 2014 at 3:04 PM
To: "McDougall, Ted" <tmcdouga@blm.gov>
Cc: Andrea Reither <AReither@energyfuels.com>

Ted, Andrea,
Sorry for the delay, I ended up having to stay home most of last week after surgery, so I just now got to them.
One comment of concern: Included in our May 28 comments was a statement that said EFR needed to count on backfilling all shafts, not just the ones that were uncased. Figure 4-1 shows a design for a non-backfilled cased shaft. Ted, are you OK with that? That is a substantial change from what our comments said.
However, with regards to these designs themselves, as long as they meet the BLM's requirements from a design standpoint, I think they are ready for the PE stamp prior to final submittal.
Thanks,

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**McDougall, Ted** <tmcdouga@blm.gov> Tue, Nov 4, 2014 at 11:51 AM
To: Mike Bradley <mbradley@utah.gov>
Cc: Andrea Reither <AReither@energyfuels.com>

Yes Mike, I think the new shaft closure design addresses BLM's initial concerns. If I recall, the thinking for backfill was the concern that the cement cap could eventually fail due to: 1) unstable near-surface materials at some locations; 2) insufficient overlap of cap beyond the borehole (BLM guidance is to extend a distance of 1/2 diameter of borehole) and 3) question of long term integrity of casing to support the borehole wall beneath the cap. The new design calls for a 14' foam plug beneath the cap to address items 2 & 3 and increasing the diameter of the cap to 4' overlap to address item 2. Let me know if you see something we are missing and we can discuss further and if needed make additional changes.

Thanks
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**Mike Bradley** <mbradley@utah.gov> Tue, Nov 4, 2014 at 12:19 PM
To: "McDougall, Ted" <tmcdouga@blm.gov>
Cc: Andrea Reither <AReither@energyfuels.com>

Sounds good, Ted. As long as BLM is OK with including the non-backfilled design, I'm OK with it. Before OK'ing these, I had to go back and pull up our last comments letter to refresh myself on what was said, and it included the statement about EFR needing to count on backfilling all shafts.
So, Andrea, I think that means these designs are good and ready for finalization.
Thanks,
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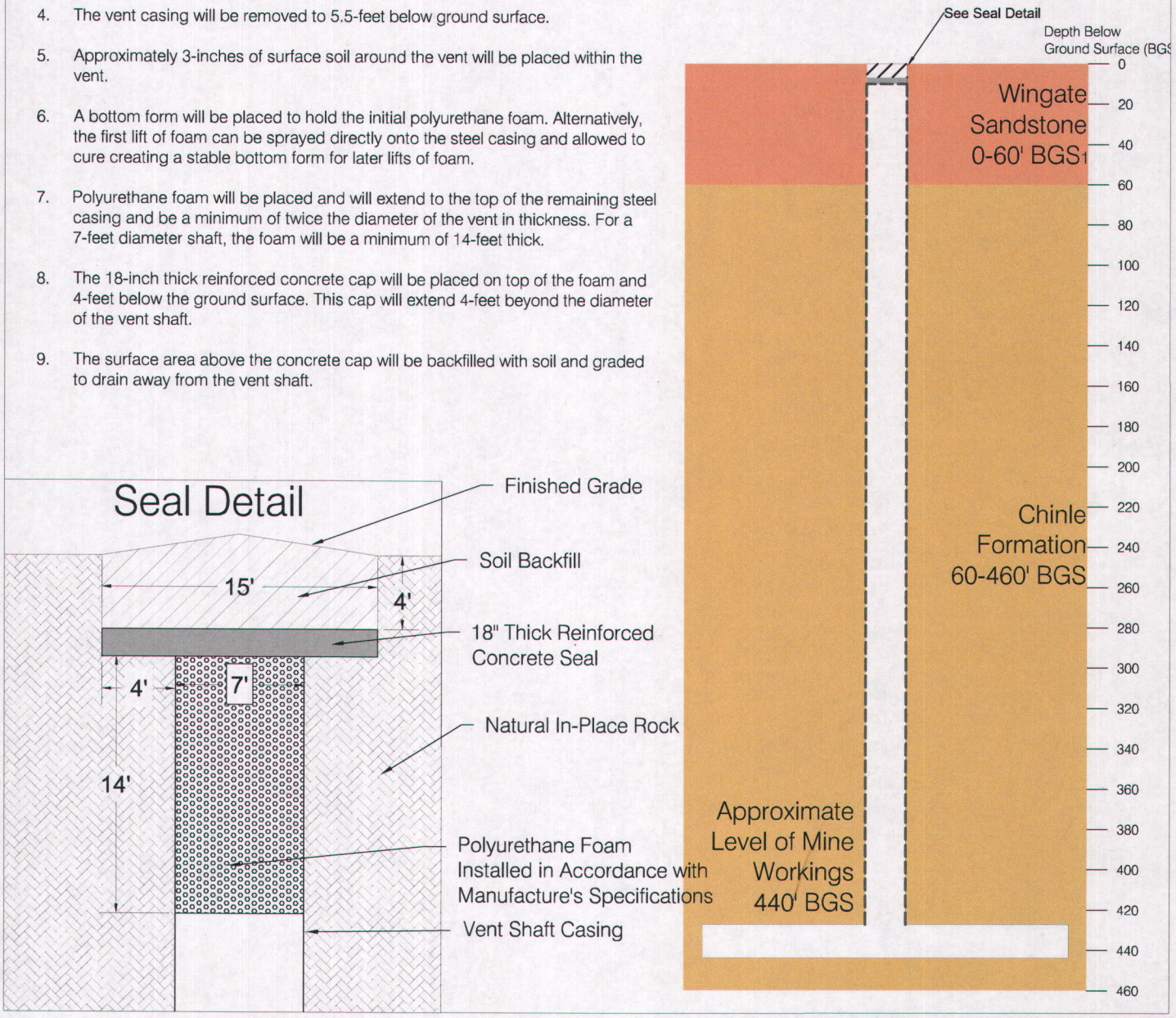
s: \source\usa\ut\daneros\maps\vent closure design\vent closure design.dwg cased vents 4-1 rellis

Notes:

1. The Wingate Sanstone varies between 0 feet and greater than 1000 feet thick in the area of the Daneros Mine.
2. The 2 existing vents are 7 feet in diameter and are cased. Future vents are expected to be 7 feet in diameter and cased. All Vents will be cased for the top 20-feet.
3. The concrete foundation for the vent fan shroud will be broken and placed within the vent shaft.
4. The vent casing will be removed to 5.5-feet below ground surface.
5. Approximately 3-inches of surface soil around the vent will be placed within the vent.
6. A bottom form will be placed to hold the initial polyurethane foam. Alternatively, the first lift of foam can be sprayed directly onto the steel casing and allowed to cure creating a stable bottom form for later lifts of foam.
7. Polyurethane foam will be placed and will extend to the top of the remaining steel casing and be a minimum of twice the diameter of the vent in thickness. For a 7-feet diameter shaft, the foam will be a minimum of 14-feet thick.
8. The 18-inch thick reinforced concrete cap will be placed on top of the foam and 4-feet below the ground surface. This cap will extend 4-feet beyond the diameter of the vent shaft.
9. The surface area above the concrete cap will be backfilled with soil and graded to drain away from the vent shaft.




Reinforced Concrete Cap

Vent Casing

Soil Cover

Energy Fuels Resources (USA) Inc.

| REVISIONS | |
|---|---|
| Date | By |
| 10/22/14 | RE |

Project: Daneros Mine
County: San Juan State: Utah
Location:

Figure 4-1
Vent Closure Design
Cased Vent Shafts

Author: RJE Date: 10/24/14 Drafted By:

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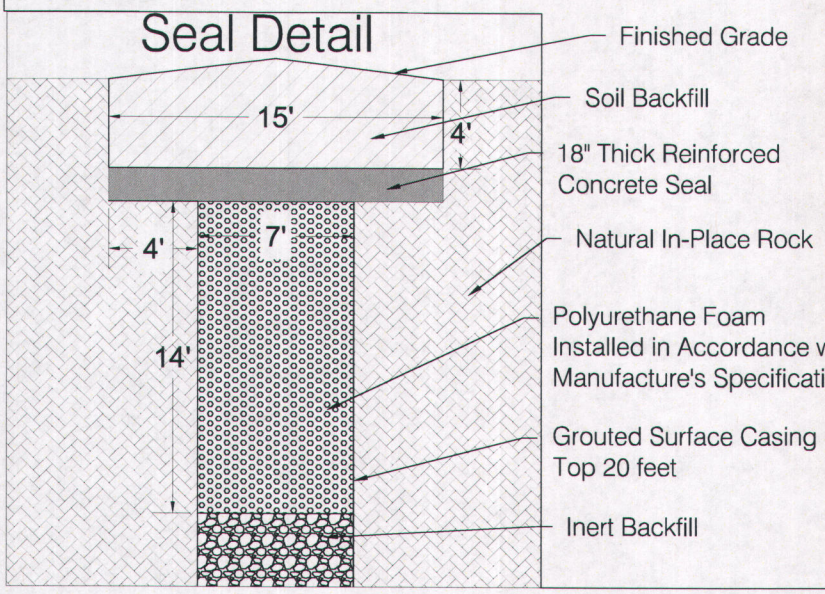
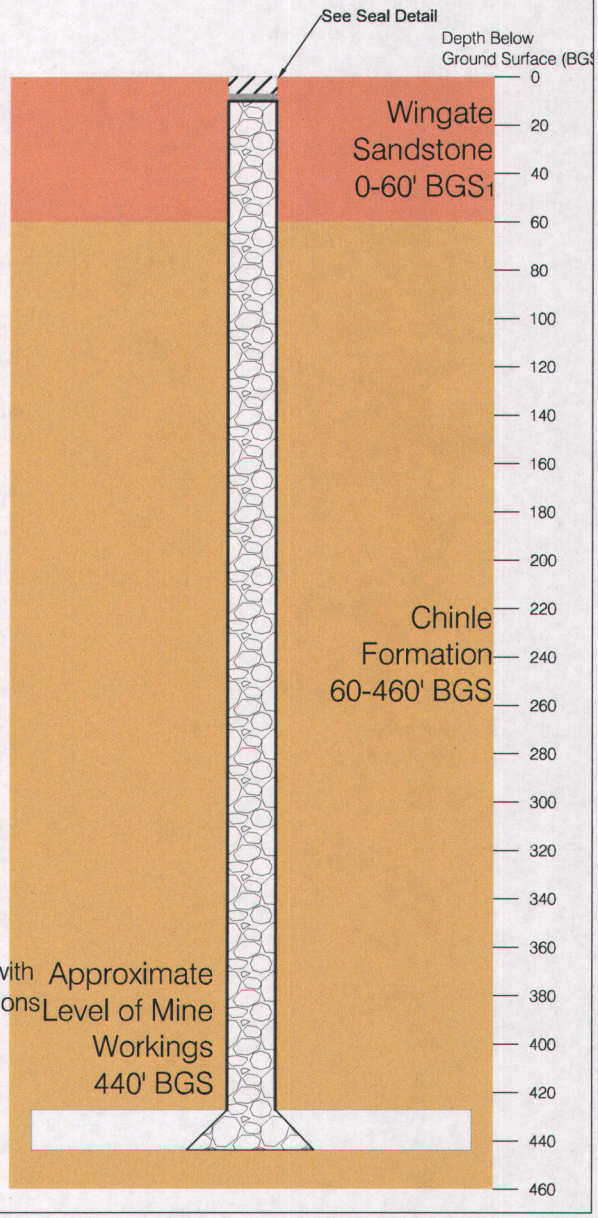
Notes:

1. The Wingate Sanstone varies between 0 feet and greater than 1000 feet thick in the area of the Daneros Mine.
2. The 2 existing vents are 7 feet in diameter and are cased. Future vents are expected to be 7 feet in diameter.All vents will be cased for the top 20-feet.
3. The concrete foundation for the vent shroud will be broken and placed within the vent.
4. The vent casing will be removed to 5.5-feet below ground surface.
5. Approximately 3-inches of surface soil around the vent will be placed within the vent.
6. During reclamation of an uncased vent shaft, inert material will be used to backfill the vent and will extend from the mine workings to the base of the foam plug. This backfill will serve as the bottom form for the foam.
7. Polyurethane foam will be placed on top of the backfill and will extend to the top of the remaining steel casing and be a minimum of twice the diameter of the vent in thickness. For a 7-feet diameter shaft, the foam will be a minimum of 14-feet thick.
8. The 18-inch thick reinforced concrete cap will be placed on top of the foam and 4-feet below the ground surface. This cap will extend 4-feet beyond the diameter of the vent shaft.
9. The surface area above the concrete cap will be backfilled with soil and graded to drain away from the vent shaft.




Reinforced Concrete Cap

Inert Material

Soil Cover

Energy Fuels Resources (USA) Inc.

| REVISIONS | |
|---|---|
| Date | By |
| 10/22/14 | RE |

Project: Daneros Mine

County: San Juan State: Utah

Location:

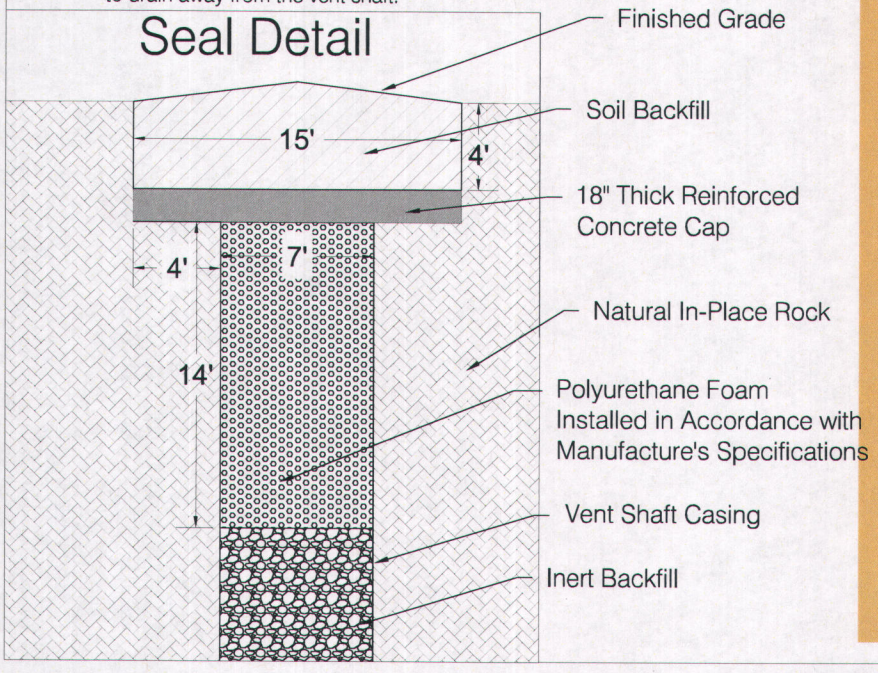
Figure 4-2
Vent Closure Design
Uncased Vent Shafts

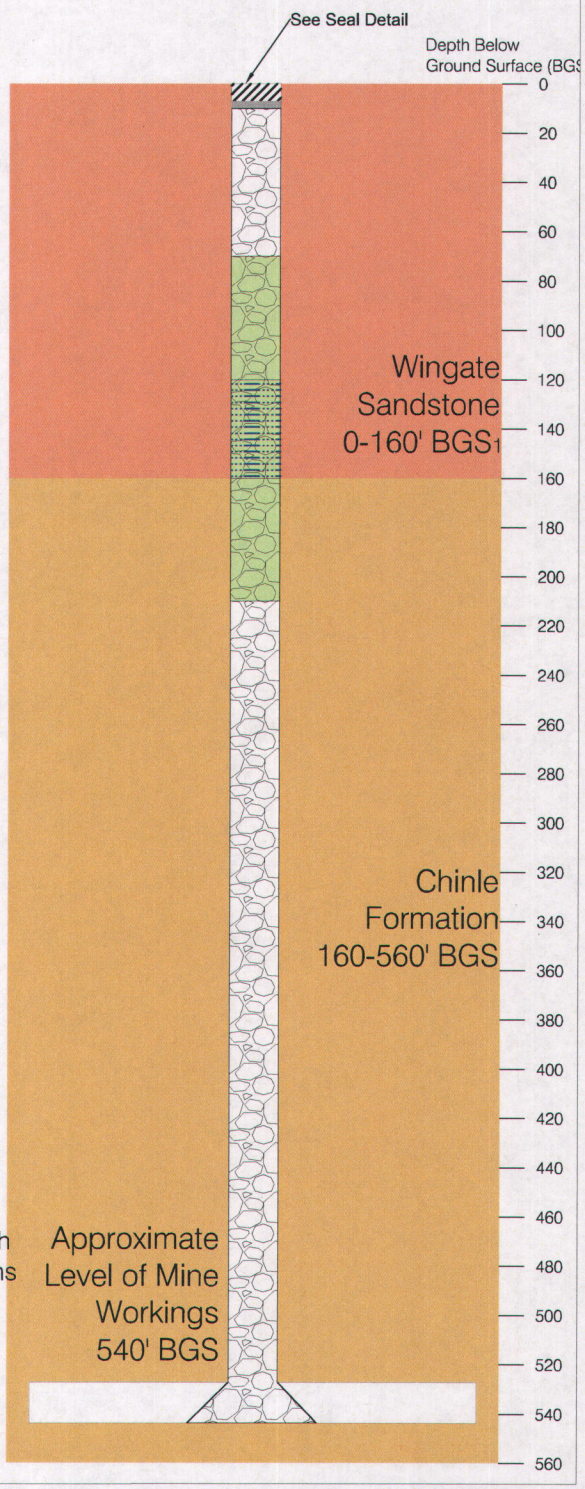
Author: RJE Date: 10/24/14 Drafted By:

s: \source\usa\ut\daneros\maps\vent closure design\vent closure design.dwg cased vents w water 4-3 rellis

Notes:

1. The Wingate Sanstone varies between 0 feet and greater than 1000 feet thick in the area of the Daneros Mine.
2. The 2 existing vents are 7 feet in diameter and are cased. Future vents are expected to be 7 feet in diameter.All vents will be cased for the top 20-feet.
3. New vents that encounter groundwater will be steel cased and will be grouted 50-feet above and below the perched aquifer.
4. The concrete foundation for the vent fan shroud will be broken and placed within the vent shaft.
5. Approximately 3-inches of surface soil around the vent will be placed within the vent.
6. The vent casing will be removed to 5.5-feet below ground surface
7. During closure of a vent shaft that intercepted groundwater, the shaft will be backfilled and a low permeability seal will be placed inside the casing extending 50-feet above and below any groundwater bearing zones. The low permeability seal will consist of a mixture of 10% bentonite and 90% inert material.
8. Polyurethane foam will be placed on top of the backfill and will extend to the top of the remaining steel casing and be a minimum of twice the diameter of the vent in thickness. For a 7-feet diameter shaft, the foam will be a minimum of 14-feet thick.
9. The 18-inch thick reinforced concrete cap will be placed on top of the foam and 4-feet below the ground surface. This cap will extend 4-feet beyond the diameter of the vent shaft.
10. The surface area above the concrete cap will be backfilled with soil and graded to drain away from the vent shaft.




Reinforced Concrete Cap
Vent Casing
Soil Backfill
Perched Aquifer
Low Permeability Seal
Inert Material

Energy Fuels Resources (USA) Inc.

| REVISIONS | |
|---|---|
| Date | By |
| 10/22/14 | RE |

Project: Daneros Mine
County: San Juan State: Utah
Location:

Figure 4-3
Vent Closure Design
Cased Vent Shafts With Groundwater Intercept

Author: RJE Date: 10/24/14 Drafted By: